

GLOSSARY OF TERMS

AIRLOCK - An intermediate chamber or room, usually located between the outer air and an inner working chamber in which air pressure and/or temperature can be regulated.

APOGEE KICK MOTOR (AKM) - A solid rocket motor that provides energy and velocity needed, once a satellite has reached apogee, to circularize the orbit.

BIPROPELLANT - Rocket propellant mixtures of fuel and oxidizer not stable at ordinary atmospheric conditions. Fuel and oxidizer are stored separately with contact taking place only in a rocket combustion chamber.

CLEAN ROOM - An environmentally controlled area (i.e., humidity and temperature) in which the airborne concentration of particles is limited by extensive filtering of all incoming air.

CREDIBLE ACCIDENT SCENARIO - A probable, possible, and/or plausible accident scenario, or sequence of failure events which can lead to the occurrence of accidents.

COMBUSTION PRODUCT - Material produced or generated during the burning or oxidation of a material.

DEFLAGRATION - Rapid burning of material below the speed of sound in the unreacted material.

DETONATION - A heat-producing reaction that propagates through the unreacted material at speeds exceeding the speed of sound.

DIFFUSION - The spontaneous movement and scattering of particles (atoms and molecules) of liquids, gases, and solids.

DOD CLASS 1.3 EXPLOSIVE - Explosives in this class are defined as fire hazards that burn vigorously with little or no possibility of extinguishment in storage situations. Explosions normally will be confined to pressure rupture of containers and will not produce propagating shock waves or damaging overpressure beyond a specified distance.

EMERGENCY - A situation created by an accidental release or spill of hazardous chemicals which poses a threat to the safety of workers, residents, the environment, or property.

EVACUATION - Removal of residents and other persons from an area of danger.

ELECTROEXPLOSIVE DEVICE (EED) - Any detonator or initiator activated by an electric current.

EXERCISE - A simulated accident or release set up to test emergency response methods and for use as a training tool.

EXPLOSION - The sudden production of a large quantity of gas or vapor, usually hot, from a much smaller amount of gas, vapor, liquid or solid. An explosion may also be viewed as a rapid equilibration of a high pressure gas with the environment; the equilibration must be so fast that the energy contained in the high pressure gas is dissipated as a shock wave.

FAULT TREE ANALYSIS - A deductive analysis procedure which represents all

possible sequences of failures and chains of events which can result in the final event at the top of the tree.

FLAMMABLE LIMITS - The upper and lower vapor concentrations of fuel to air which will ignite and burn in the presence of external ignition sources; often called the explosive limits although these are not identical.

FUEL - A material which may be burned by itself or used with an oxidizer to liberate energy for use in vehicle propulsion systems.

GAUSSIAN DISTRIBUTION - A statistical distribution named for mathematician Karl F. Gauss. It is also known as the normal distribution or bell curve, and the distribution is symmetrical around a point referred to as the mean. The spread of points is determined by the standard deviation.

GRAIN - A single mass of solid propellant of the final geometric configuration as used in a rocket motor.

GROUND SUPPORT EQUIPMENT (GSE) - Non-flight equipment, implements and devices required for the handling, servicing, inspection, testing, maintenance, alignment, adjustment, checking, repairing and overhauling of a payload system or sub-system. This may include equipment required to support another item of GSE as defined here.

HAZARD - Any situation that has the potential for causing damage to life, property, and/or the environment.

HYPERGOLIC - Term applied to the ignition upon contact of a fuel and an oxidizer without a spark or other external aid.

IMMEDIATELY DANGEROUS TO LIFE AND HEALTH (IDLH) - The maximum level to which a healthy worker can be exposed for 30 minutes and escape without suffering irreversible health effects or escape-impairing symptoms.

LEGSTAT - A device connecting a person's leg to the bottom of his shoe so that when that person is standing on a conductive floor, an electrostatic grounding path is provided.

MAGNAFLUXING - Using magnetic particles and applying a field to test load bearing hooks, shackles, eyebolts and critical welds (single point of failure) for cracks.

MONOPROPELLANT - Liquid mixtures of fuel and oxidizer or liquid molecules containing both fuel and oxidizer constituents that are stable at ordinary atmospheric conditions but react when heated, pressurized or catalyzed.

NFPA 56A - A code of the National Fire Protection Association that contains specifications for fire protection equipment.

ORDNANCE - All electroexplosive devices (EEDs), detonators, squibs, primer, pyrotechnic devices, initiators, igniters, solid propellants, explosives, warheads, ammunition, fuses and energy transfer systems (as defined in ESMCR 127-1). In a spacecraft, ordnance serve as separation devices and as igniters for motors.

OVERPRESSURE - Blast wave parameter indicating pressure significantly above what is usual or normal. Overpressure is used to quantify the strength of an explosion, and the expected damage from an explosion is determined by its overpressure. Overpressure is strongest at the point of the explosion and reduces with distance, so damage also decreases with distance.

OXIDIZER - A substance that yields oxygen readily to support the combustion of organic matter, powered metals, and other flammable material.

PAYLOAD - The total complement of specific instruments, space equipment, support hardware, and consumables carried into space to accomplish a discrete activity.

PAYLOAD FAIRING - Outer shroud or casing used to protect a payload during launch and through the escape of the dense atmosphere of the earth.

PERIGEE KICK MOTOR (PKM) - A solid rocket motor that provides the substantial energy needed to boost a satellite to a higher apogee from a lower orbit, typically to the 22,000 mile geosynchronous orbit altitude. This motor section of the spacecraft is designed to separate from the payload after its energy is expended.

PERSONAL PROTECTIVE EQUIPMENT (PPE) - Equipment designed and used to protect a worker from the hazards present during a given operation. The PPE level (ranging from most protective level A to less protective level C) required depends on the operation. For example, PPE level A includes a chemical resistant suit, gloves, and boots, and a self-contained breathing apparatus, and is suitable for protection in atmospheres where hazardous vapors may be present.

PRIMER - A relatively small and sensitive initial explosive train component, which when actuated, initiates the function of the explosive train, and with an adequate booster, will reliably initiate high explosives.

PROPELLANTS - Balanced mixtures of fuel and oxidizer designed to produce large volumes of hot gases at controlled, predetermined rates, once the burning reaction is initiated.

REPORTABLE QUANTITY (RQ) - The quantity of a hazardous substance that triggers reporting under CERCLA; if a substance is released in a quantity that exceeds the RQ, the release must be reported to the National Response Center (NRC), as well as to the State emergency response commission (SERC), and the community emergency coordinator for areas likely to be affected by the release.

RISK - A measure of probability or likelihood that damage to life, property, and/or the environment will occur if a hazard manifests itself; this measure includes the severity of anticipated consequences to people.

SAFETY DISTANCES - Safety distances are empirical distances in relation to quantities of explosives and are the minimum permitted for separation of facilities within a hazard area of possible explosions and for separation of the explosive hazard from inhabited buildings, passenger railroads and public highways in order to control the magnitude of damage, loss of life, and serious injuries. Separation distances are not absolute safe distances but are relative.

SCRUBBER - An air pollution control device for removing impurities from a gas stream. Toxic constituents in the vapor phase are absorbed into and react with the "scrubber liquor" on the packed bed material in the scrubber tower. Vertical flow units like the one at Astrotech commonly use countercurrent flow of gas and liquid for maximum mixing and contact.

SOLID PROPELLANTS - These propellants act as monopropellants. Homogeneous propellants are ones in which each molecule contains both fuel and oxygen (e.g., nitrocellulose-containing compounds). Composite propellants are physical mixtures of a finely ground oxidizer in a matrix of plastic, resinous or elastomeric fuel (e.g., ammonium perchlorate in a resin binder).

SOLID ROCKET MOTOR - Motor which operates using homogeneous solid propellants. Following ignition, the propellant charge burns, and it is not possible to interrupt or control the combustion process. The advantages of SRMs are the short time needed for the activation, a long storage life, and a simple design.

SPACECRAFT - Another term for payload.

SPECIAL POPULATIONS - Groups of people that may be more susceptible than the general population due to preexisting health conditions (e.g., asthmatics) or age (e.g., infants and the elderly) to the toxic effects of an accidental release.

SPIN BALANCING - An operation performed during payload processing, to ensure that all weight is evenly distributed around the spin axis of a spacecraft.

SQUIB - Generally, any various small size pyrotechnic explosive device. Specifically, a small explosive device, loaded with low explosive such that its output is primarily heat as opposed to an explosion. The device is usually electrically activated and used to initiate the action of pyrotechnic devices and rocket propellants.

STABILITY CLASSES, ATMOSPHERIC - Pasquill stability classes (ranging from "A" TO "F") are meteorological categories of atmospheric conditions. Pasquill stability class A represents unstable conditions under which there are strong sunlight, clear skies, and high levels of turbulence in the atmosphere, conditions that promote rapid mixing and dispersal of airborne contaminants. At the other extreme, class F represents light, steady winds, fairly clear nighttime skies, and low levels of turbulence. Airborne contaminants mix and disperse far more slowly with air under conditions, and may travel further downwind at hazardous concentrations than in other cases. Stability class D, midway between A and F, is used for neutral conditions, applicable to heavy, overcast, daytime or nighttime.

SWALE - A low tract of land or slight depression, especially moist or marshy ground.

TOXICITY - The ability of a substance to cause damage to living tissue, impairment of the central nervous system, severe illness, or death when ingested, inhaled, or absorbed by the skin.

ULLAGE - The amount a container lacks of being full, the empty space being filled with gas or vapor.

UPPER STAGE - An expendable launch vehicle such as the Titan, Delta and Atlas/Centaur have several "stages." As each stage completes its burn during launch it is discarded. The first stage is usually called the "booster stage," the second stage the "sustainer stage" and subsequent stages "upper stages." The upper stages of most ELVs are capable of placing payloads into elliptical transfer orbits.

VAPOR DISPERSION - The movement of clouds or plumes in air due to wind, gravity spreading, and mixing.

VOLATILE - A substance that has a high vapor pressure (i.e., it will readily vaporize) at a low temperature.

WRISTSTAT - A device that connects a person's wrist to a cable that leads to a grounding path to the building grounding grid. A wriststat is used when work is not being performed on a conductive floor and a grounding path cannot be established through a legstat.